

WHAT IS CLAIMED IS:

1. A method for spent nuclear fuel reprocessing, which comprises a fluorination step of applying fluorine to spent nuclear fuel powder to cause volatilization and a removal step of removing a plutonium fluoride from fluorides volatilized in the foregoing fluorination step.
2. A method for spent nuclear fuel reprocessing, which comprises a fluorination step of applying fluorine to spent nuclear fuel powder obtained through decladding of spent nuclear fuel to cause volatilization, a fixation step of fixing a plutonium fluoride among fluorides volatilized in the foregoing fluorination step, a step of refining a uranium fluoride, a removal step of removing the aforementioned fixed plutonium fluoride, and an oxidative conversion step of applying water vapor and hydrogen to the removed plutonium fluoride, thereby converting the fluoride into its oxide.
3. A method for spent nuclear fuel reprocessing, which comprises a fluorination step of applying fluorine to spent nuclear fuel powder obtained through decladding of spent nuclear fuel to cause volatilization, a fixation step of fixing a plutonium fluoride among fluorides volatilized in the foregoing fluorination step, a step of refining a uranium fluoride, a removal step of removing the aforementioned fixed plutonium fluoride, a re-fluorination step of

applying fluorine to the removed plutonium fluoride to cause re-fluorination, and a gas phase hydrolysis step of applying water vapor and hydrogen to the gaseous plutonium fluoride obtained through re-fluorination in the re-fluorination step, thereby converting the fluoride into its oxide.

4.           The method for spent nuclear fuel reprocessing according to Claim 1, wherein the foregoing fluorination step is carried out to cause fluorination of uranium and that of plutonium at the same time.
5.           The method for spent nuclear fuel reprocessing according to Claim 1, wherein the foregoing fluorination step is carried out using a flame furnace.
6.           The method for spent nuclear fuel reprocessing according to Claim 1, wherein the plutonium fluoride is removed along with a fixing agent in the foregoing removal step of removing a plutonium fluoride.
7.           The method for spent nuclear fuel reprocessing according to Claim 6, wherein a uranium fluoride is used as the foregoing fixing agent used for fixing the plutonium fluoride.
8.           The method for spent nuclear fuel reprocessing according to Claim 7, wherein uranyl fluoride is used as the foregoing fixing agent.
9.           The method for spent nuclear fuel

reprocessing according to Claim 2, wherein both a solid plutonium fluoride and a solid fixing agent are subjected to oxidative conversion in the foregoing oxidative conversion step, thereby converting them into their oxides.

10. The method for spent nuclear fuel reprocessing according to Claim 2, which further comprises a granulation step of forming the oxide powder or particle obtained in the foregoing oxidative conversion step into a granule.

11. The method for spent nuclear fuel reprocessing according to Claim 3, wherein both a gaseous plutonium fluoride and a gaseous fixing agent are subjected to gas phase hydrolysis in the foregoing gas phase hydrolysis step, thereby converting them into their oxides.

12. The method for spent nuclear fuel reprocessing according to Claim 3, wherein the oxide particle obtained in the foregoing gas phase hydrolysis step is filled in a cladding tube without a granulation of the oxide particle.

13. The method for spent nuclear fuel reprocessing according to Claim 2, wherein the uranium fluoride is refined in the form of a hexafluoride in the foregoing step of refining a uranium fluoride.

14. The method for spent nuclear fuel reprocessing according to Claim 3, wherein the uranium fluoride is refined in the form of a hexafluoride in

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the foregoing step of refining a uranium fluoride.